HUMBLE employees naturally have a special interest in the problems which face the producers and consumers of natural gas. For a thorough and clear analysis, read President Hines H. Baker's "Natural Gas For the Future" article on Page 5.

Tankers Load at Baytown Docks — *E. M. Schiwetz*

The HUMBLE WAY

NOVEMBER-DECEMBER, 1953

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WINGS FOR THE WORLD

IN AUGUST of 1896 the newspapers of America carried a story out of Germany that helped spark one of the great inventions of all time. The story told of the tragic death in a gliding accident of Otto Lilienthal, engineer and physicist and author of *Experiments in Soaring*. For five years Lilienthal had been building and flying gliders. He had made more than 2000 short glides, amounting to about five hours of flying time, before a vagrant gust of wind sent him hurtling to his death.

Two young brothers in Dayton, Ohio, read that story, and it seemed to work a catalytic effect on their dormant genius. Wilbur Wright, a 29-year-old manufacturer of bicycles, had long had a desultory interest in aeronautics, and Lilienthal's exploits, although ill-starred, fanned an inquisitive flame that was never to be quenched. His brother Orville, four years younger and his partner in the bicycle shop, also caught the contagion.

The two Wrights began poring over everything they could find about the fledgling art of flying. They started out with the idea of taking up gliding as a sport, but the deeper they delved into the subject, the more compelling became their desire to be the first to solve the problem of powered heavier-than-air flight.

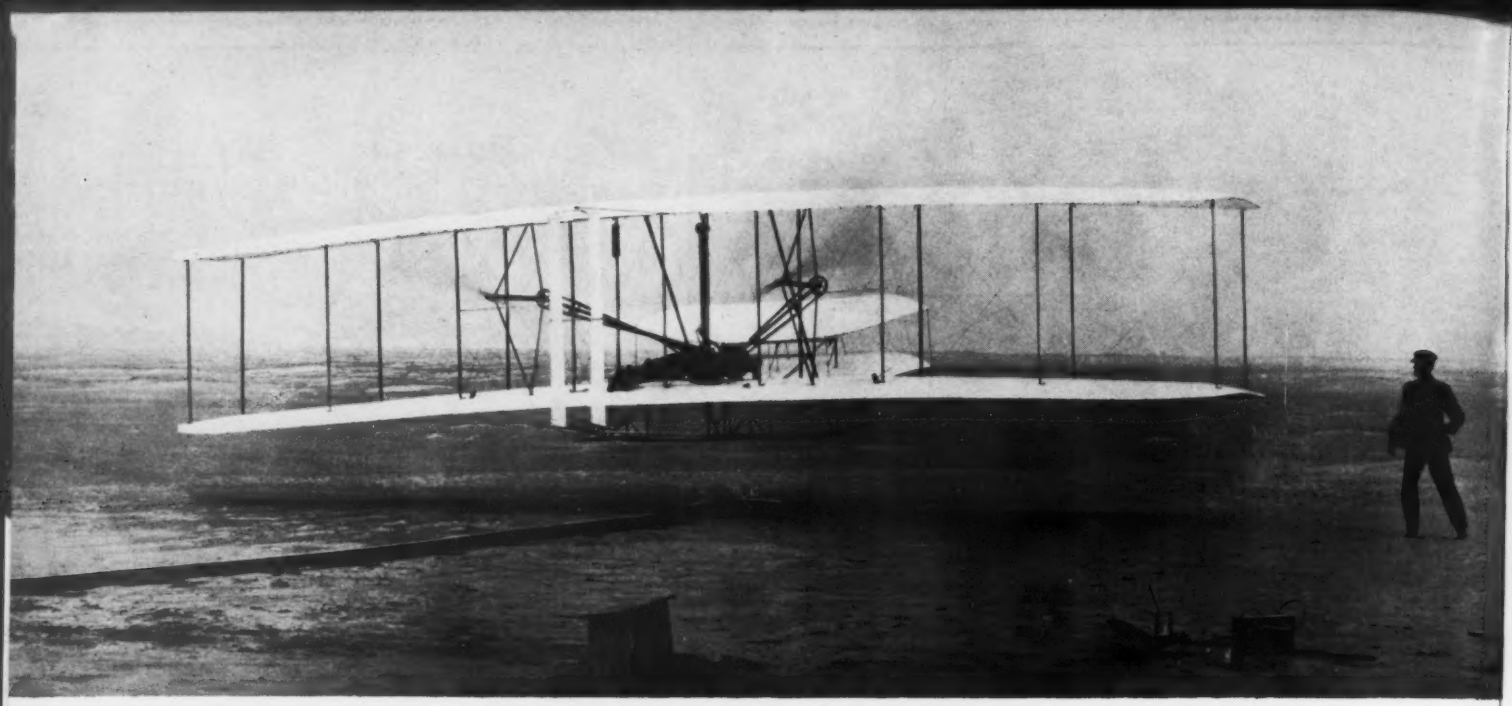
To some of their neighbors this ambition must have appeared presumptuous on a grand scale. For it was a dream common to the ages, this dream of flight, and one that had thwarted the efforts of a crowded roster of theorists and experimenters. Men had ever looked skyward and envied the gravity-defying ease with which birds dipped and soared among the clouds. Their urge to fly found early expression in folklore and legend, a classic example being the Greek myth of Icarus, who fashioned a pair of wings from wax and feathers only to make the unhappy mistake of flying too close to the sun.

But some bold-minded men were not content with mere flights of fancy. They groped with the problem, not vicariously but at first hand, and a few came tantalizingly close to success. Even though they failed, they left a rich heritage of knowledge and techniques to the two brothers from Dayton. Among them, to name a few, were such men as these:

Leonardo da Vinci, the giant intellect of the Renaissance, who designed both ornithopters (one-man, bird-winged lifting devices) and helicopters, but who was stumped as to a means of powering his aircraft. Of even greater importance, he handed down to his successors the propeller and (though the Wrights never used it) the parachute.

Sir George Cayley (1773-1857), the father of British aeronautics, from whom came the idea of a propeller-driven airplane powered by an "explosion machine." But like Leonardo, Cayley was years ahead of his time—the first practicable gasoline engine was not developed until 1865. Cayley

Salt water gushes from a formation far beneath the surface as a drill stem test is made on a wildcat location. (See "Suitcase Sand," page 13.)



With Orville at the controls, the Wright Flyer took to the air for the first time on Dec. 17, 1903. Wilbur (right) trotted alongside to steady the wings on the 40-foot takeoff run. The frail craft stayed aloft 12 seconds, traveled about 120 feet.

did, however, build a biplane glider with vertical and horizontal rudders, and wings that were cambered instead of flat surfaced. Cayley's gardener, so the story goes, test-hopped the glider, but a crash landing quickly nipped his budding enthusiasm for aviation.

John Stringfellow, another Englishman, who in 1848 built a model airplane, equipped it with an eight-pound steam engine, and sent it soaring 120 feet under its own power.

The young Frenchman, Alphonse Penaud, who in 1876 tried to build a 2600-pound, two-passenger airplane but who could never find an engine light enough to meet his requirements. Pinched for funds and in poor health, Penaud committed suicide at the age of 30. It was in France, incidentally, that the Montgolfier brothers had constructed the first man-carrying balloon in 1783, and there was considerable interest in that country in aeronautics. One well-to-do French engineer, Clement Ader, lavished $120,000 on his research efforts. On

Birthplace of aviation was this shop, since moved to Greenfield Village, Mich.

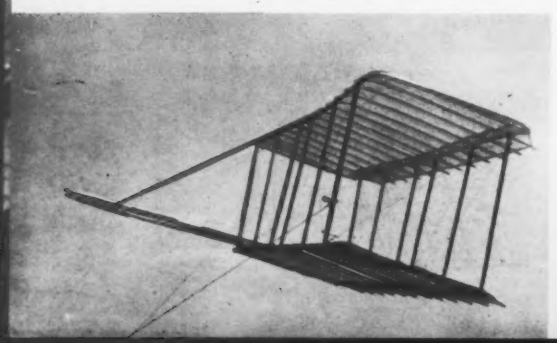
his fourth try he almost—but not quite—achieved controlled flight with his steam-powered "Avion."

There were also many others, some a few years ahead of the Wrights in their experiments, others of whom were the Wrights' contemporaries. Among these were inventive titans like Alexander Graham Bell, Sir Hiram Maxim of machine gun fame, and Professor Samuel Pierpont Langley of the Smithsonian Institution. (The latter's "aerodrome"—from the Greek, meaning "air runner"—missed flying only by the narrowest of margins. A faulty catapult dumped the craft into the Potomac, but 11 years later this same airplane, with minor modifications, proved completely airworthy.) And then there were the noted experts on gliding: Octave Chanute, Percy Pilcher (also killed in a gliding accident), and, of course, Otto Lilienthal.

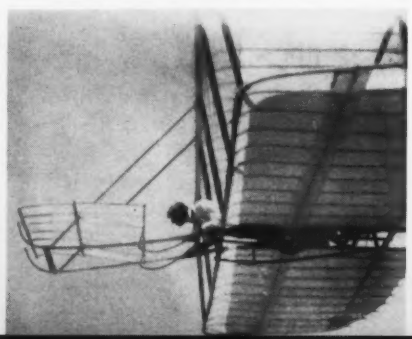
But the significant thing is that while practically all the elements of flight were known, none of the men just named had ever been able to combine these elements in such a way as to achieve controlled powered flight. The ultimate success was to go, not to these great men of science, but to two doggedly determined brothers from Ohio, neither of whom had ever finished high school.

Wilbur and Orville Wright had several facets to their character that augured well for the task they were undertaking. The sons of a clergyman,

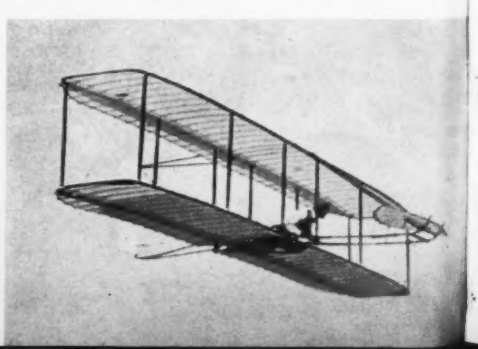
1900 **Wrights tested** their first glider by flying it as a kite.



1901 **Second glider** had more lift but proved hard to control.



1902 **Third glider** had few bugs, set pattern for 1903 plane.



they early showed qualities of initiative, independence of thought, and tenacity of purpose. They were always their own employers (their first venture was a weekly magazine), and they seemed to thrive on a 12-hour workday. Only on Sundays—a day they strictly observed—would they relax and take things easy. Bachelors both, they lived together in the family home, and they would sometimes argue out their conflicting ideas on the problems of flight with such skill that they wound up converting one another to the opposite viewpoint. They used trial and error to resolve such differences.

Their bicycle shop, started in 1892, made a good laboratory for their experiments. In their spare time, for nearly four years, they steeped themselves in the literature of aeronautics. Finally, in 1900, they forsook theory for practice and began building their first glider. Its cost, not counting their labor, came to $15.

THE big stumbling block, not yet overcome, was one of equilibrium. "This problem of equilibrium," Wilbur later wrote, "in reality constituted the problem of flight itself." Their predecessors had tried to establish lateral stability either through automatic means or by having the operator shift his position, but the Wrights came up with a brilliant new idea: They proposed to keep their craft in balance by using levers and wires to warp the wings.

Eager to try out their glider, the two brothers decided to take off during their slow season (September to January) and carry their experiments to the field. Always safety-minded, they wanted to test their glider first as a kite. For that they needed a place where there were strong and constant winds. They wrote the U. S. Weather Bureau in Washington, and back came a geographical recommendation—Kitty Hawk, North Carolina.

Kitty Hawk, located on the splinter-thin peninsula off the upper coast of North Carolina, turned out to be a happy choice. The Wrights arrived there in October of 1900 and found a sprawling expanse of windswept beach. They pitched their tent under a small tree not far from Kill Devil Hill, a 105-foot sand dune, and proceeded to put their glider to the test. They flew it as a kite, working the controls with cords which dangled to the ground. The wing-warping technique worked, and on their last day the brothers took turns at making about a dozen successful glides.

THIS was the first of four annual excursions to Kitty Hawk. The brothers returned in 1901 with a new glider, one nearly twice as large as the first, but this time the results were none too encouraging. Back in Dayton, they ferreted out the bugs in their machine. Building a small wind tunnel, they tested some 200 wing models in search of the best degree of camber. When they returned to Kitty Hawk in 1902, they had a new and much improved glider, one in which they made over 700 glides, the longest for 622 feet.

The results of the 1902 experiments convinced Wilbur and Orville Wright that they were on the verge of success. All they needed now was to add an engine of suitable weight and horsepower, and two counter-rotating propellers. None of the automobile manufacturers showed much interest in building a gasoline engine to the Wrights' specifications so, self-reliant as ever, the brothers built their own

OIL TAKES TO THE AIR

Airliners such as these on parade at a Texas airport now link 687 U. S. cities.

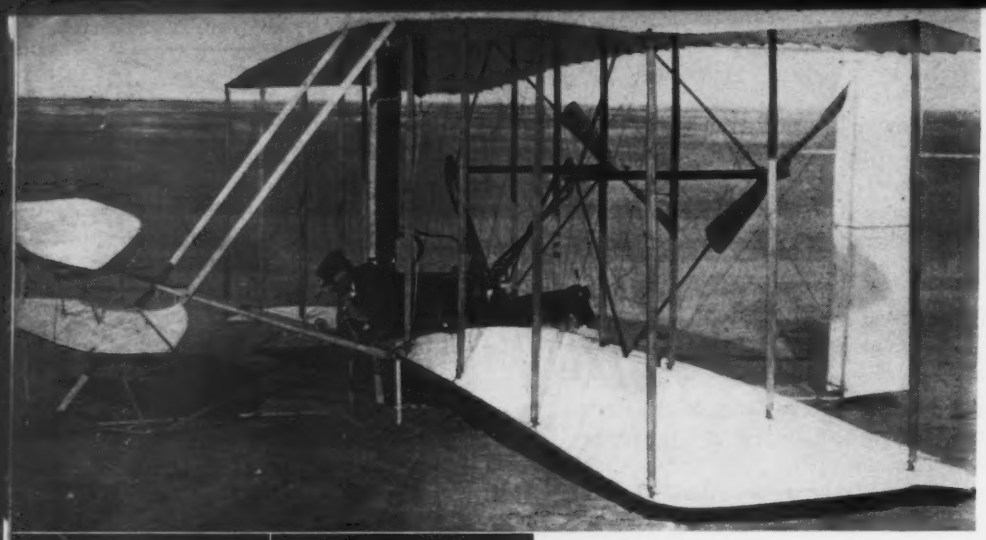
THE Wright Brothers' historic flight foreshadowed another new product besides the airplane. That product was aviation gasoline, but it was one that was nearly three decades in developing.

For many years after Kitty Hawk, aircraft engines were powered by whatever gasoline was available. Along about 1930, however, new and more powerful engines began to demand fuel of higher quality. Humble's Baytown Refinery was one of those able to supply the 72 octane number straight run gasoline that was needed.

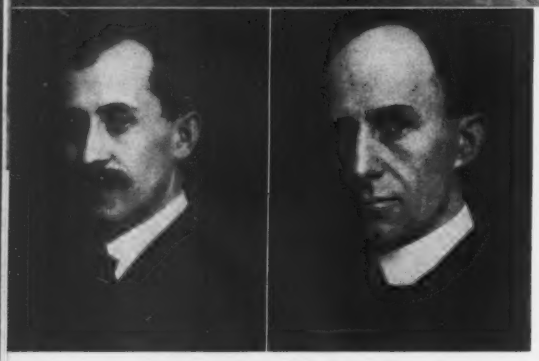
Humble's first tank of aviation gasoline was produced at Baytown on Feb. 6, 1931. (It showed a knock rating of 2.4, the octane number scale being unknown at that time.) Later, by adding lead to a base stock cut from coastal crudes, octane numbers as high as 90 were achieved, but it took new manufacturing processes to make possible the high octane aviation gasolines available today.

Alkylation proved to be the answer, and in the fall of 1938 Baytown put into operation the world's first alkylation plant. Developed just in time to meet the needs of World War II, the alkylation process was expanded rapidly, and Baytown became the world's largest supplier of aviation gasoline to the armed forces of the United States and of our allies.

Aircraft power plants continue to grow in size and complexity. Some piston engines now deliver more than 3500 horsepower, some jets more than 5600. Slaking the thirst of these finicky giants is no easy task, but the oil industry has never yet failed to supply the high quality fuel needed to "keep 'em flying."



Wilbur Wright is shown stretched out in flying position on the 1903 plane.



Orville (left) and Wilbur were modest, hard-working. Neither ever married.

with the help of their bicycle shop mechanic, Charles Taylor. It was a four-cylinder, 12-horsepower job and it weighed 170 pounds, but on it the two Wrights were to putt-putt to fame.

They returned to Kitty Hawk on September 25, 1903, and from the beginning mishaps seemed to dog their efforts. A 75-mile-an-hour wind lashed the small hangar housing their flying machine and threatened to send nearly a year's work tumbling across the beach. There was trouble with the propeller shafts, a propeller broke, and finally Orville had to rush back to Dayton to make necessary repairs.

ON DECEMBER 14, three days after Orville's return, they decided to give it a go. A coin spun into the air, and Wilbur won the honor of making the first attempt. There was little wind that day so they moved their 60-foot monorail "runway" to a nearby sand dune, thus giving the plane a downhill takeoff. With Wilbur aboard, the frail craft lifted into the air, struggled valiantly forward for three and a half seconds, and then stalled out. The brothers did not consider this 105-foot down-grade hop a conclusive test. It took two days to repair the damage incurred in that first raunchy landing, and not until December 17 were they ready to try again.

The morning of December 17, 1903—a Thursday—dawned raw and cold. A bitter wind was whipping out of the north at near-gale force, and the puddles left on the beach by a recent rain were glazed with ice. It was close to being bird-walking weather, as the pilots of later years were to call it, but the two Wrights were of no mind to wait for a more favorable occasion. Christmas was near. They wanted to get home.

BY MID-MORNING the wind had subsided to 20 miles an hour, and the Wrights signaled for some help. Over from the nearby Kill Devil Life Saving Station trooped five North Carolinians who had offered to lend a hand. The volunteers found the brothers already out on the beach with their eye-bugging contraption, a muslin-winged, strutted and wired crate that had cost less than a thousand dollars to build. The Wrights warmed up the engine, and at 10:35 a.m. they were ready to try again, this time from level ground.

It was Orville's turn. He stretched out on the lower wing, his left hand on the control lever, his right ready to flip off the stop watch and other recording instruments. The restraining rope was slipped, and with Wilbur trotting alongside to steady the right wing, the machine slid forward on the wooden monorail, slowly at first and then picking up speed. Suddenly it rose into the air. Its props flailing mightily, it wobbled ahead into the teeth of the wind, now skimming the beach, now ten feet up, but definitely under control. About 120 feet from its takeoff point, the plane made a downward dart and skidded to a stop.

The flight had lasted only eleven seconds, but as Orville Wright later wrote, "it was nevertheless the first in the history of the world in which a machine carrying a man had raised itself by its own power into the air in full flight, had sailed forward without a reduction of speed, and had finally landed at a point as high as that from which it started."

The brothers made three other flights that same day. On the fourth one, Wilbur stayed aloft for 59 seconds and traveled 852 feet. The Wrights were discussing this feat with the spectators when a gust of wind upset the plane and so severely damaged it that further experiments had to be called off. Off to Dayton went a happy telegram. It ended: "Inform Press. Home Christmas."

HALF a century has sped by, and the slipstream of time has sifted over all traces of those momentous doings on the sands of Kitty Hawk. But this December, as aviation whizzed past its golden pylon—its fiftieth year of powered flight—there were signs aplenty that Wilbur and Orville Wright had blazed a trail whose end is not even yet in sight.

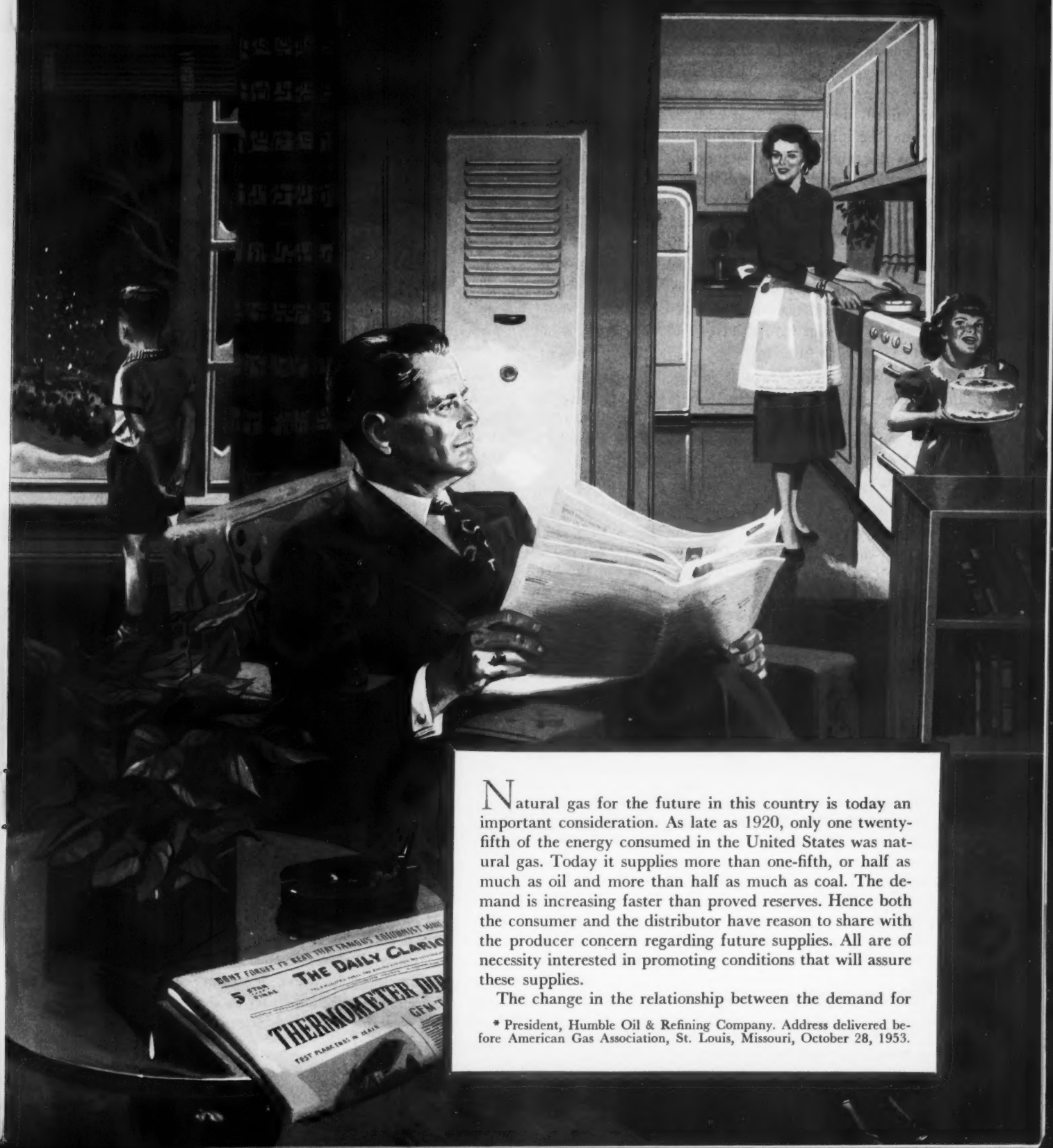
The newspapers told the story: Early in October a Navy jet, the Skyray, set a new record for level flight at 753 miles an hour. In November a test pilot dove an experimental Skyrocket at 1327 miles an hour—twice the speed of sound. From Canada came reports of a project aimed at producing a disk-shaped, flying saucer of a fighter plane with a speed of 1500 miles an hour. And so it goes.

What would the Wrights think about these lightning-fast offspring of their 35-mile-an-hour flying machine? Well, it is known that Orville sometimes worried about the devastation wrought by airplanes during the war, but he went on to say: "I feel about the airplane as I do about fire. Though I deplore the destruction caused by fire, I think it was good for the human race that someone learned to start fires."

With that, most of us in this winged world will agree.

Natural Gas For The Future

*By Hines H. Baker**



Natural gas for the future in this country is today an important consideration. As late as 1920, only one twenty-fifth of the energy consumed in the United States was natural gas. Today it supplies more than one-fifth, or half as much as oil and more than half as much as coal. The demand is increasing faster than proved reserves. Hence both the consumer and the distributor have reason to share with the producer concern regarding future supplies. All are of necessity interested in promoting conditions that will assure these supplies.

The change in the relationship between the demand for

* President, Humble Oil & Refining Company. Address delivered before American Gas Association, St. Louis, Missouri, October 28, 1953.

"Control of the producers' field prices by the Commission would appear to be contrary to the intent of Congress when it enacted the Natural Gas Act . . ."

natural gas in the United States and natural gas reserves has been most pronounced since World War II. Since 1945, the demand doubled, while proved reserves increased by only one-third. By 1952, proved reserves were near a level of 20 times the annual rate of production, which is perhaps as low as desirable from the standpoint of assuring adequate supplies for the future. Furthermore, if the same rate of growth in demand and in proved reserves experienced during the past six years should continue, proved reserves by 1958 would be only 15 times the annual rate of production. This prospect is not unlikely in view of recent predictions that a practically unlimited demand for gas may occur in the next ten years. Such a development would pose a major problem with regard to adequate supplies of natural gas for the future.

A look at the price of natural gas over a period of time and at the relationship between such price and the prices of coal and oil reveals a reason for this situation. The retail price of natural gas today is approximately the same as it was in 1939, while the prices of coal and heating oil have doubled. Notwithstanding its cleanliness, convenience, and greater efficiency, gas is being sold to consumers at retail in many large cities, including some in important coal producing states, at a lower price per million British thermal units than heating oil or coal. It is being sold in the field by the producer at a price equal to about one-fourth the price of fuel oil at Gulf Coast refineries and about two-fifths the price of coal at the mine. The cost of producing natural gas has risen greatly and is continuing to rise. In the light of these facts, it is not difficult to understand the rapid growth in the demand for natural gas and the slower rate of increase in proved reserves.

The meaning and significance of these facts in relation to future supplies of natural gas are not generally appreciated.

The problem of adequate future supplies is greatly aggravated and made doubly serious by reason of continuing

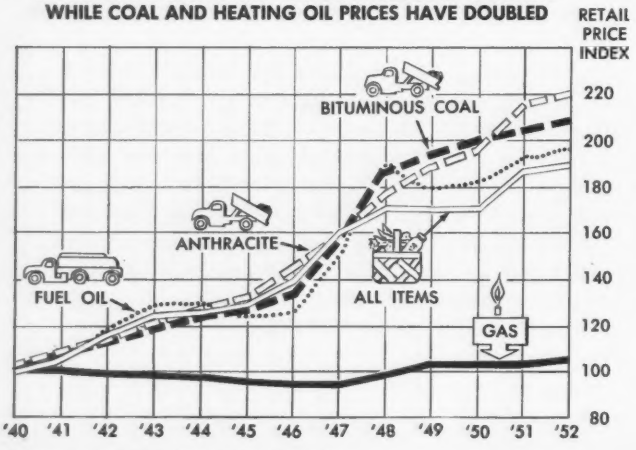
threat of regulation by the Federal Power Commission of the producers' field price of gas moving interstate. In fact, the Commission is already regulating the charges for gas produced by natural gas companies on the basis of a fixed return on the depreciated investment in producing properties. The threat is that this regulation may be extended to the independent producer of gas, who is in no sense a public utility.

Before examining the nature and effect of this threat if made effective, let us look at the nature and operation of the natural gas producing business.

Members of the American Gas Association are fully familiar with public utilities, with their nature and the effect of public regulation. The gas distributing companies have long been recognized as public utilities and have operated under state and municipal regulations. Likewise, the interstate transmission lines transporting gas in interstate commerce and selling it for resale by distributors have been regulated as public utilities under the Natural Gas Act passed by Congress in 1938.

As you know, a public utility usually operates under a public franchise or a certificate of public convenience and necessity. It is granted certain exclusive rights to serve the public, holds itself out to perform these services to the public, dedicates its property to this purpose, and is protected against competition in whole or in part in its chosen and restricted field of operation. After its investment is made, it enjoys a reasonably stable business with more or less fixed risks that can be fairly well measured, and is entitled by

RETAIL GAS PRICES HAVE REMAINED ALMOST THE SAME WHILE COAL AND HEATING OIL PRICES HAVE DOUBLED

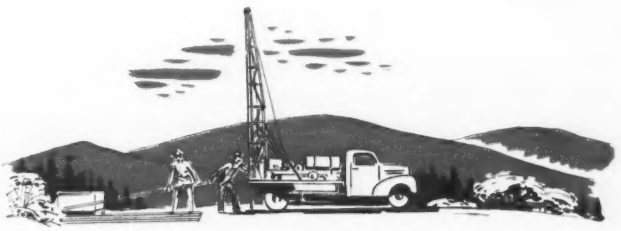


Source: *Gas Facts 1952*, American Gas Association.

law to have its rates regulated so as to yield a reasonable return on the investment. Because of the heavy investments involved and the necessity of securing the services required in the public interest, competition is restricted, and the rates are regulated to protect the public against unreasonable charges and at the same time provide a fair return on the public utility's investment.

The business of producing natural gas has none of these characteristics of a public utility. It is highly competitive; there are no franchises or certificates of public convenience and necessity that give one producer preference or a protected area of operations or that restricts competition or afford a monopoly. The risks are much greater. In fact, to those who enter the business there is no assurance of any return on investment; and often the entire investment itself is lost without any return. There is no holding out to serve the public in a specific operation and no dedication of properties to a public use as is the case with public utilities. Under these circumstances, no basis exists under our competitive enterprise system to regulate the gas producing business as a public utility.

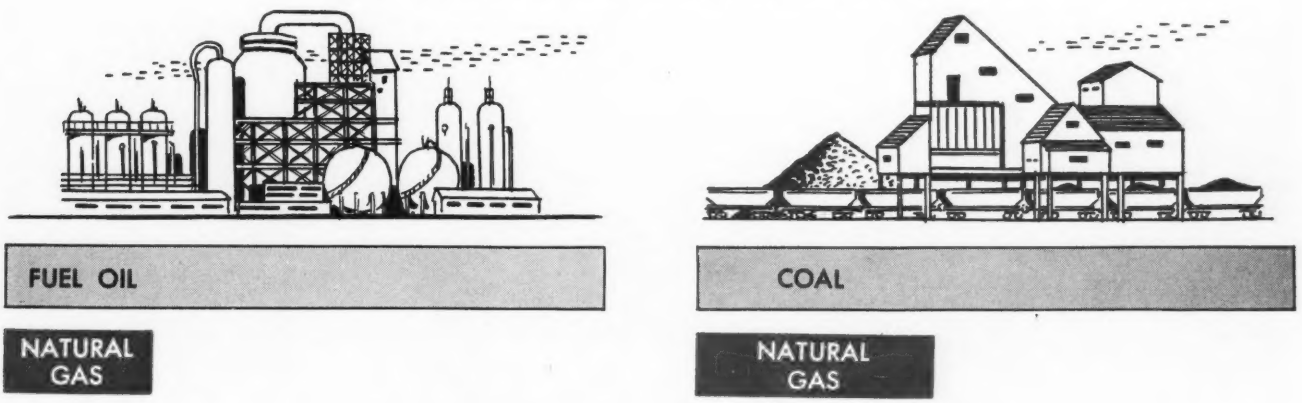
The business is not similar to the operation of railroads, bus lines, telephones, electric power, or natural gas distribution. These are recognized public utilities regulated both in the interest of the public served and of the investor and the operator of the business. The natural gas producing business, on the other hand, is similar to other mining ventures in the high risks involved and similar to these and to agriculture and manufacturing in the prevalence of competition. In these competitive industries with which it is similar, there is no assurance of any fixed percentage of return on investment. Hence, there is no more occasion to regulate the business of producing natural gas or the price of such gas when sold by a producer than there is to regulate the price of coal or iron at the mine, oil or sulphur at the well, cattle or sheep at the ranch, the products of the factory. These prices are controlled by the forces of supply and demand through competition in a free market. The public is protected by this competition from exorbitant prices; and the businessman engaged in these ventures gains his incentive to invest and work in the hope of satisfactory returns by offsetting losses on one venture by success in another. This is the time-honored American way. It has resulted in high productivity in all lines, and has brought us through progress to the economic well-being we enjoy today.



The business of producing gas is closely related to the oil producing business. They are generally carried on together, since any well may produce oil or gas or both if it is not a dry hole. Both are highly competitive in the search for prospects, the purchase of leases, the drilling of wells, and in seeking markets. There are some 5,000 individual units engaged in the gas producing business; and new ones are free to enter the business at any time without the grant of a franchise.

The business is characterized by great risks. Despite the technical improvements in geologic and geophysical methods of locating structures favorable to the accumulation of oil or gas, only drilling can determine whether these products underlie any location. Of every nine exploratory wells drilled, only one on the average discovers oil or gas, and only one in forty-four finds an oil field with a reserve as large as a million barrels. Many discoveries are not profitably operated, because of poor reservoir conditions, small

RELATIVE PRICE OF NATURAL GAS, FUEL OIL AND COAL



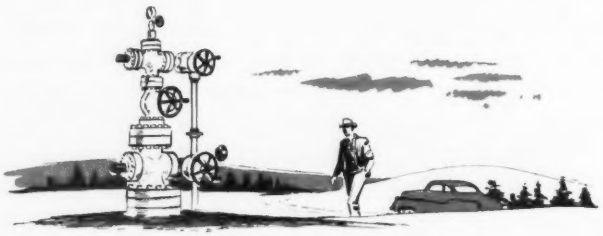
NATURAL GAS IS BEING SOLD BY PRODUCER IN THE FIELD AT ONE-FOURTH THE PRICE OF FUEL OIL AT GULF COAST REFINERIES AND TWO-FIFTHS THE PRICE OF COAL AT THE MINE

"Production of natural gas is a highly risk-taking venture, actively competitive, and wholly different in character from a public utility business properly subject to rate regulation."

reserves, or excessive costs. The development of discovered fields often results in the drilling of many dry holes. The hazards, risks, and costs increase with the necessity for deeper drilling, the development of areas in mountains, swamps, bays, and off-shore in deep waters, and the fact that reservoirs become more complicated as the search for fields continues. Often exploratory wells cost $500,000, to $1,000,000; and when abandoned as dry holes, they generally result in the surrender of leases on the surrounding area at great loss of investment.

To compensate for these risks, to induce investment of new capital and reinvestment of profits, the returns on successful ventures must be attractive. They must be sufficient to pay for exploration expense and all the unsuccessful ventures and yield such a profit as will induce the operator to risk investments in new ones. The risks are too great to secure the necessary expenditures for exploration and development on the basis of a fixed percentage return on the investments in the successful ventures. The natural gas required to meet the demand cannot and will not be discovered and produced under such regulation.

Because of this inherent nature of the business it is definitely against the public interest for the producing business to be subjected to price regulation. And no doubt Congress was well aware of this when it specifically exempted production and gathering of natural gas from the jurisdiction of the Federal Power Commission when the Natural Gas Act was passed in 1938. The threat today of Commission regulation of the price at which gas is sold by the producer to a natural gas company in interstate commerce for resale



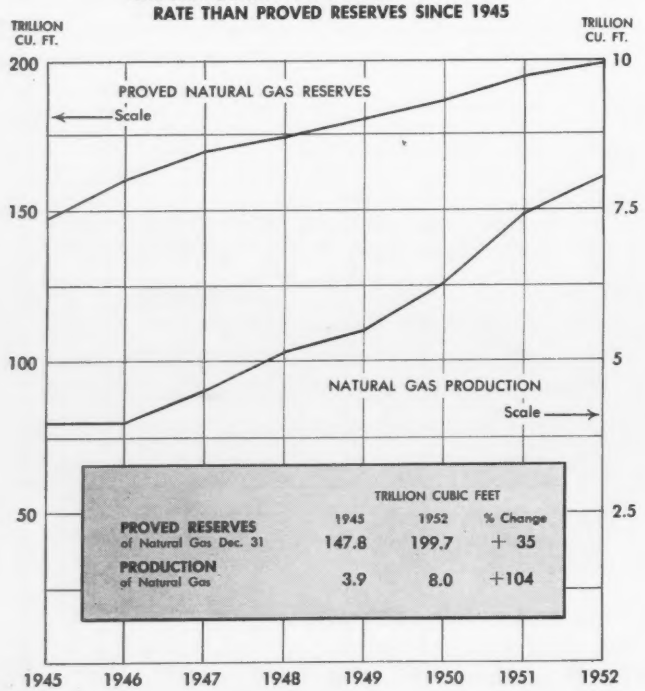
is, in fact, a threat to the continuance of adequate supplies of gas in the future for the natural gas companies engaged in interstate transportation and sale of gas, the local distributors of gas, and finally the American gas consumers.

Let us examine this threat more specifically.

The Natural Gas Act was designed to meet a specific problem. The gas companies engaged in the local distribution of gas to consumers were subject to state and municipal regulation as public utilities. Their rates were fixed by public authority. Production was subject to state regulation for conservation purposes. But the gas transmission companies, engaged in transporting gas from the fields where produced to the city gates and selling it to the distributing companies, were not subject to effective state or municipal regulation because they were engaged in interstate commerce. The Natural Gas Act was enacted by Congress in response to requests for regulation of charges by these interstate utilities. The Act was not intended nor designed to regulate local distribution at one end or production and gathering at the other end. In fact, both were expressly exempted from the jurisdiction of the Commission. It was designed to fill the gap between these by regulating natural gas companies in the interstate transportation of natural gas and sale thereof to distributors for resale.

Notwithstanding the exemption and early holding by the Commission itself in the Columbian case[1] that it had no jurisdiction over production and gathering and the producers' field price, it has gradually encroached into this field. It began by including gas reserves owned by natural

GAS PRODUCTION HAS INCREASED AT A FASTER RATE THAN PROVED RESERVES SINCE 1945

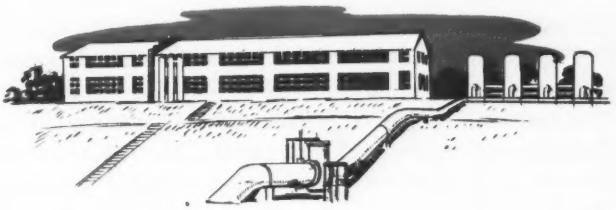


	TRILLION CUBIC FEET		
	1945	1952	% Change
PROVED RESERVES of Natural Gas Dec. 31	147.8	199.7	+ 35
PRODUCTION of Natural Gas	3.9	8.0	+104

[1] In the matter of Columbian Fuel Corporation, 33 P. U. R. (N. S.) 3 (1940).

gas companies in the rate base of those companies and permitting only a percentage return (about 6%) on the depreciated cost of such reserves. In these cases valuable gas reserves were taken into the rate base at nominal values only.[2] This step was wholly unnecessary and unsound. The Commission clearly had authority to prevent natural gas companies from charging as an expense gas produced by them and taken into the trunk lines at a price higher than the competitive going price in the field or its fair and reasonable value. This would have protected the distributor and consumer fully. At the same time it would have assured the gas company as a producer of receiving the equivalent of the competitive field price, which would have placed it in the same position as the independent producers in each field.

The Commission next took jurisdiction over the field price charged by a natural gas company for its own production in an independent arm's length sale to another natural gas company, which moved the gas interstate for resale. This action was upheld by the courts in the Interstate case.[3] However, during these developments the Commission disclaimed any intention of taking jurisdiction over the price charged by an independent producer in an arm's length sale to a natural gas company for resale and so held in a number of cases. In 1947, it issued an order to the effect that it would not exercise jurisdiction in such instances.[4] In 1950, Congress enacted the Kerr Bill expressly denying jurisdiction in the Commission in such cases. This was vetoed by the President. Thereupon, the Commission revoked its 1947 order, and announced that investigations would be made of sales by independent producers where the price appeared excessive.[5] It investigated the charges made by Phillips Petroleum Company for gas in or near the fields where produced in sales to natural gas companies. Upon review, however, in July 1951, the Commission



found that under the Natural Gas Act it had no jurisdiction, because the sales were a part of production and gathering.[6]

This holding was reversed by the Circuit Court of Appeals for the District of Columbia upon an appeal there by several consumer cities.[7] The case is now before the Supreme Court.

(Note: Subsequent to the delivery of this address, the Supreme Court on November 30 refused to review the case. This emphasizes the conclusion stated that Congressional legislation is required to resolve all of the issues involved.)

That case may determine in similar fact situations that the Commission cannot regulate field prices charged by an

[2] See Federal Power Commission v. Hope Natural Gas Co., 320 U. S. 591 (1944); Colorado Interstate Gas Co. v. Federal Power Commission, 324 U. S. 581 (1945).

[3] Federal Power Commission v. Interstate Natural Gas Co., 331 U. S. 682 (1947).

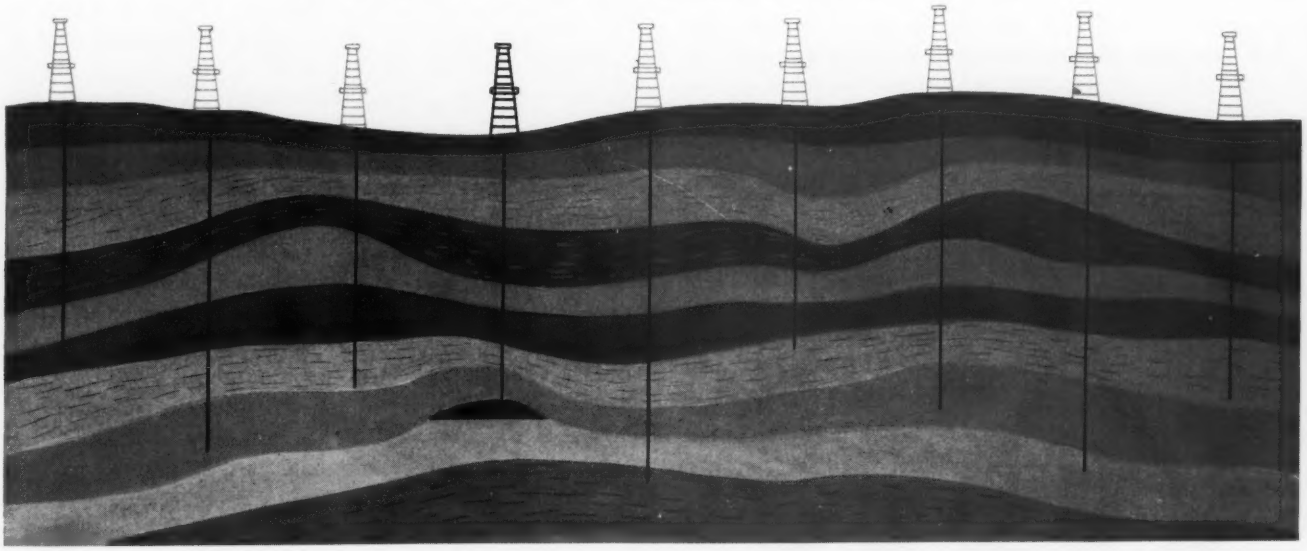
[4] Order No. 139, issued August 7, 1947.

[5] Order 154, issued July 11, 1950.

[6] In re Phillips Petroleum Company, FPC Docket No. G-1148, Opinion No. 217, July 18, 1951.

[7] State of Wisconsin v. Federal Power Commission, 205 (Fed. 2d) 706 (1953).

OF EVERY NINE EXPLORATORY WELLS DRILLED ONLY ONE ON THE AVERAGE DISCOVERS OIL OR GAS



. . . AND ONLY ONE IN FORTY-FOUR FINDS AN OIL FIELD WITH A RESERVE OF A MILLION BARRELS OR MORE

"Government regulation will not serve to protect the interests of consumers as well as will competition"

independent producer. It may hold that the Commission has authority to regulate such prices. It will not in any event free the natural gas company from Federal Power Commission control of the value at which it takes the gas from its own producing properties into the trunk line. In its producing activity the natural gas company is not performing a public utility function. It is competitive with other non-utility operators engaged in producing gas. It takes the same risks. Equity and consistency require that it be given the same treatment as the independent producer. And thus the price at which gas production of the regulated company goes into the trunk line following production and gathering should be the going competitive field price, or if there is no such price, then its fair and reasonable value based on the nearest competitive conditions.

Federal Power Commission control of the field price for natural gas is unsound and against the best interests of the consuming public and against the general welfare for many reasons:

1. Control of the producers' field prices by the Commission would appear to be contrary to the intent of Congress when it enacted the Natural Gas Act, based on a consideration of the legislative history of the Act and upon the express provision of the Act itself exempting production and gathering of natural gas from the Commission's jurisdiction. The field sale is a necessary incident to production and gathering; control of this is the most effective control possible over these operations.

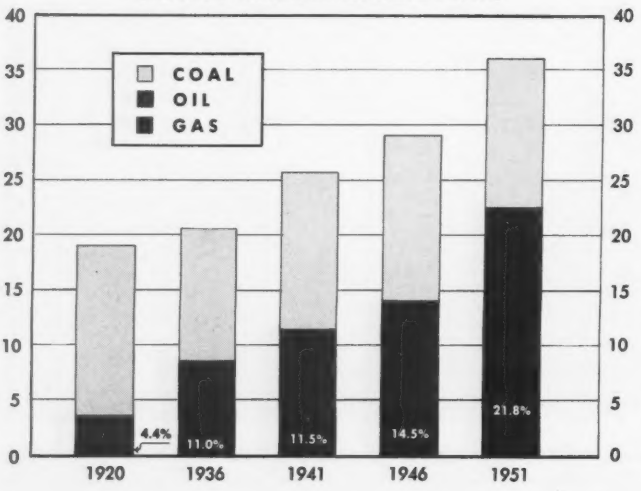
2. Production of natural gas is a highly risk-taking venture, actively competitive, and wholly different in character from a public utility business properly subject to rate regulation. Government price regulation is no more applicable or suitable to it than to oil at the well, coal at the mine, livestock on the ranch, or the products of the factory. Price regulation of competitively produced commodities is basically wrong in principle and can only serve to hurt the

interests of the consumer as well as of the producer. Furthermore, and equally important, any attempt to regulate gas prices on the basis of cost plus a fixed return on investment would result in a chaotic diversity of price that would discourage producers from selling gas in interstate commerce, encourage the inefficient, and penalize the efficient. Prices would have to be determined for thousands of producers, some of whom operate hundreds of leases in many fields. The inefficient, high-cost producer would be rewarded with the highest price and profit while the efficient producer would be discouraged by the lowest price. Everyone would want to buy the cheap gas; and no one would want the most expensive gas. Some purchasers would be forced to buy the high priced gas, while others would be allowed to enjoy the advantage of the low priced gas. Such a system would be unsound and unsatisfactory. The only fair and sound principle of price determination for a competitively produced commodity, such as natural gas, is to allow the forces of supply and demand in a free market to set a general market price.

3. Government regulation will not serve to protect the interests of consumers as well as will competition. Competition among thousands of natural gas producers in a free market provides the best safeguard against unreasonable prices. This would be true for natural gas companies, for distributing utilities, and for the ultimate consumer. As in the past, purchasers of gas will shop around for the cheapest supplies they can find, just as producers will search for markets paying the best prices. Such a competitive system will determine the proper price level to balance supply and demand continuously. Under the competitive conditions that have existed, gas has sold in the field at

GAS NOW SUPPLIES OVER ONE FIFTH OF U. S. MINERAL ENERGY CONSUMPTION

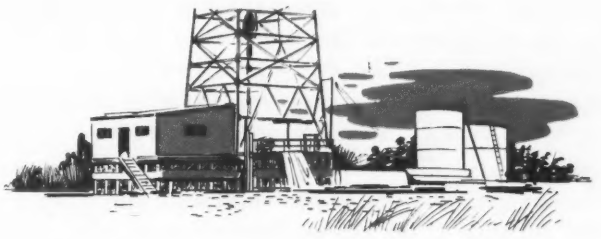
(THOUSAND TRILLION BRITISH THERMAL UNITS)



"Artificial control of the producers' field price for gas will lead in time to shortage and to higher prices."

ridiculously low prices. Much of it is still being bought at depression-level prices under twenty-year contracts, negotiated when there was a surplus of gas and when costs were a fraction of what they are today. These low prices have prevailed only because gas has too often been considered a by-product. The producers selling at these prices could not stay in business or afford to continue the search for gas but for the fact that they rely on their oil operations to carry the burden of their heavy exploration and development costs. Now, we canot supply enough gas to meet demands as an incident to our search for oil. The demand for gas is increasing faster than the demand for oil. If demands are to be met, gas must begin to bear its share of exploration and other petroleum industry costs. Strong demand will inevitably act as a force to raise price; but the encouragement to the search for new supplies as a result of better prices will bring forth additional supplies and thus will just as assuredly act as a force to keep prices reasonable. Under current conditions of supply and demand, gas prices may be expected to rise from the depressed levels at which they have been selling; but they will still be reasonable so long as they are determined under the free operation of supply and demand by competition among gas producers and competition of gas with coal and oil. The entire history of our country proves that competitively determined prices are the best means of assuring consumers of adequate supplies at reasonable prices and of stimulating producers to greater efficiency and efforts to satisfy their customers.

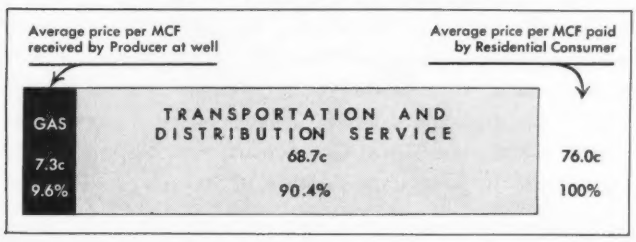
4. Artificial control of the producers' field price for gas will lead in time to shortages and to higher prices. Regulation of price on the basis of costs will not bring forth adequate supplies of gas. This has been demonstrated by the fact that regulated natural gas companies have contributed very little to meeting the additional requirements of their customers, and have been forced to turn instead for the additional supplies to producers who have not been regulated as to price. Judging from experience of the natural gas companies, government regulation of price would be based on the investment in successful ventures only without regard to the large amounts of capital that have been risked and lost in exploration and unsuccessful ventures. Attempts to allow for these factors for petroleum producers would inevitably raise the question as to what part of exploration expense, dry holes, and surrendered leases should be borne by gas instead of oil and lead to control of oil as well if these factors are to be taken into account. If the successful ventures alone are considered,



producers would be more apt to lose than make money under government regulation because of the risks involved. They would certainly not be able to borrow or attract outside capital under such conditions. Consequently, new supplies of gas would diminish and shortages would develop. In such cases, producers would concentrate on selling available supplies within the state where it is produced, and would reduce their sales in interstate commerce as their contracts expire. With the growth of industry in the Southwest, intrastate sales of gas may be more attractive than interstate sales if the field price is regulated on such sales. Shortages resulting from regulation of the field price of gas would thus have their major impact on interstate sales. On the other hand, under a system of competitive price determination in a free market, producers will be encouraged to adjust their search for new supplies to changing demands, regardless of whether those demands go up or down. In such a situation, supplies will be adequate to meet demand and both intrastate and interstate markets will be satisfied. Only if we avoid the threat of regulation of the field price of gas can we hope to succeed in preventing shortages.

5. Regulation of the producers' field price of gas would in time mean higher prices to consumers. In the first place, such regulation would force the high-cost gas into interstate sales, for the reasons previously mentioned. There would be another effect, however, which would also tend to increase cost to the consumer. A shortage of gas would mean higher

THE PRODUCER RECEIVES SMALL PART OF THE PRICE PAID BY THE RESIDENTIAL CONSUMER



"Regulation of the producers' field price of gas would in time mean higher prices to consumers."

costs of transportation and distribution. Because of the large fixed investments involved in these public utility operations, a decline in the volume of business handled means a corresponding rise in the unit cost. If pipe lines can operate at or near capacity, their cost of transportation per unit of gas moved is much less than if they operate at only part of capacity. The same principle applies to distribution costs. A shortage of gas would thus tend to increase the costs of transportation and distribution, which today account for 85 to 90 per cent of the delivered price of gas to the residential consumer. Thus, the application of public utility regulation principles to gas production, which as heretofore stated has none of the characteristics of a public utility business, would in time defeat its alleged purpose of protecting consumers and actually result in much smaller supplies as well as in higher delivered prices for gas.

There is need to remove the uncertainties and correct the inequities that exist regarding the extent of jurisdiction and authority of the Federal Power Commission over production and gathering of natural gas and the producers' field price of such gas. The exercise of control over the production and gathering activities of natural gas companies and the return from their producing operations has already discouraged their finding and development efforts. The threat of such control over independent gas producers has materially restrained the sale of natural gas for movement in interstate commerce for resale. It will reduce exploration and development. The problem cannot be solved by administrative action. Such action may vary widely with changes in personnel and administrations. This has occurred frequently in the past. There is no assurance that

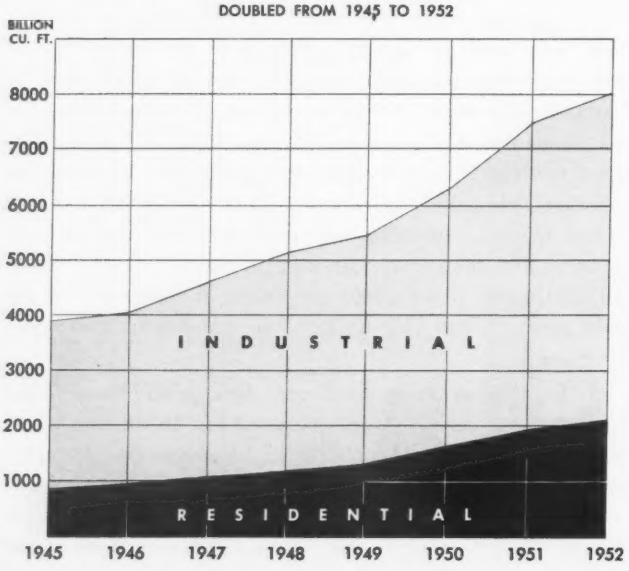
the favorable attitude of the present Commission may not be changed by a later one. The Phillips case pending in the Supreme Court cannot resolve all these issues. Nothing short of congressional legislation can resolve them.

The solution of this problem lies in congressional legislation which expressly prevents the Federal Power Commission from (1) regulating the production and gathering of natural gas; (2) fixing or regulating the price at which the producer or gatherer of natural gas sells his gas to a natural gas company; and (3) fixing the rates of a natural gas company below a figure that will allow as an expense the actual price paid for gas purchased from non-affiliates, or the market price or fair and reasonable value in the field considering market conditions of that produced by the natural gas company or acquired from an affiliate, plus reasonable compensation for gathering.

Such legislation will release the productive forces of our free competitive enterprise system, will thereby encourage the risk of venture capital in the finding, developing and producing of natural gas, and will provide conditions favorable for bringing forth the quantities of gas required over the long run to meet the needs and demands of the American consumer. Over the long pull, the gas producing industry, regulated as a public utility and held to public utility returns will not be able successfully to compete with oil or coal for a place in the supply of energy for the Nation. It must be free to compete on equal terms if it is to supply the consumers' needs. That is what Congress intended when the Natural Gas Act was enacted in 1938. It is essential for adequate supplies of natural gas for the future.

MARKETED PRODUCTION OF NATURAL GAS

GAS CONSUMPTION MORE THAN DOUBLED FROM 1945 TO 1952



SUITCASE SAND

"How can you be sure it's a dry hole?" asked the cafe man.

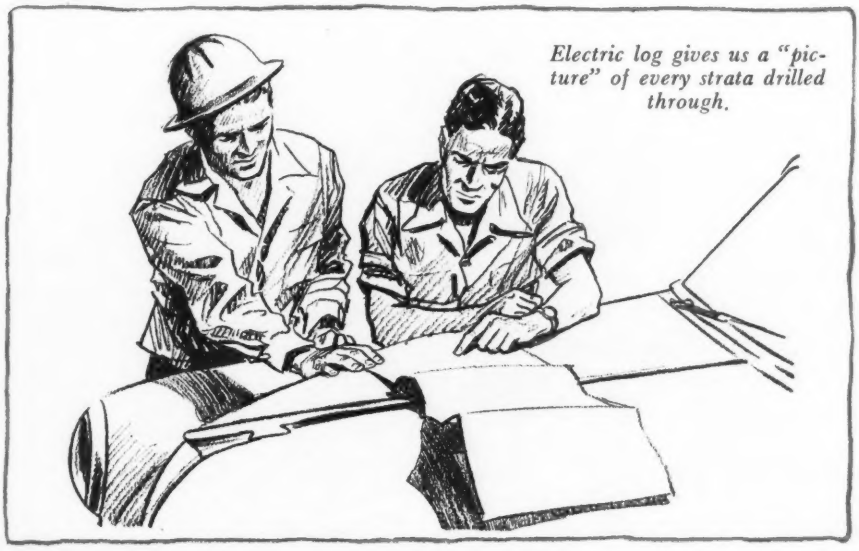
A dry hole is a costly venture and oil men never give one up without thoroughly testing it.

Editor's note: This story, which attempts to clear up some widespread misconceptions about the oil industry and dry holes, is based on actual experiences in connection with several typical wildcats. Only the names and locale are fictitious.

IT WAS mid-morning and a cold winter rain beat fitfully against the windows of the little Southeast Texas roadside cafe. Three of the cafe's four customers sat at the varnished pine table, toying with their coffee cups and chatting with the ease of long acquaintanceship. The fourth, a khaki-clad man of about 35, sat alone with his cup of coffee at the serving counter.

"Well," said one of the men at the table, "I hear they've hit the suitcase sand out at Joe Whitcomb's oil well. They say it's another dry hole."

"Yeah," the man across the table put down his empty cup and pushed it aside, "that's what they say. But I know better. They found oil in that hole, all right, and they can't tell me different. I saw it floating on the mud pit. They're just not ready to bring that well in. You wait and see. Some day they'll come back and open up that hole and let the oil flow."



Electric log gives us a "picture" of every strata drilled through.

"That's right," nodded the third man at the table, "I saw the oil, too. Kinda like a rainbow floating around on top of the mud."

Engrossed in their conversation, the men didn't see the quick grin that Pete Jenkins, the cafe operator standing behind the counter, flashed at the solitary customer. Nor did they see the stranger's wry smile and slight shake of the head.

A few minutes later, the three men dropped their nickels on the table, put on their raincoats and departed.

Pete picked up the glass coffee urn and refilled the cup of his lone customer at the counter.

"How about it, Bill?" he asked, "Any chance that those fellows are right about that well?"

Bill Hendrix, Humble's production geologist on the unsuccessful wildcat test, thought carefully before he answered. He and Pete Jenkins had become pretty good friends in the past few weeks. He knew Pete was going to lose some good customers when this test was abandoned as a dry hole and the crews departed.

Bill Hendrix didn't want to leave any doubts about that test in anybody's mind, and especially in Pete Jenkins'.

"Pete," he said slowly, "I've heard that story so many times it doesn't even bother me any more. Every time we hit a dry hole—and we all hit a lot of

them—there is somebody around who doesn't believe it's really dry. Somebody always thinks we found oil, but didn't want to produce it. I can't figure it. Why would any oil company spend maybe two hundred thousand dollars to find oil and then not produce it? It doesn't make sense, but some people always seem ready to believe it."

Bill stopped to sip tentatively at the still-too-hot coffee, then set the cup back in the saucer.

"No, Pete," he continued, "you can bet your bottom dollar that if we had found commercial oil in that hole we'd have completed it as a producer. That's what we drilled it for."

The cafe man rubbed thoughtfully at a spot on the counter with his dish towel. "What about that oil on the mud pit?" he asked. "Both of those men said they saw it, and they're pretty truthful men."

"Sure they did," Bill agreed. "But the oil they saw didn't come from the hole, it came from oil cans. We use a lot of lubricating oil around drilling machinery, and some of it always gets into the pit. It often gives casual visitors the wrong idea, especially when they haven't been around drilling rigs before."

Pete Jenkins poured himself half a cup of coffee and came around the end of the counter to sit down beside Hendrix.

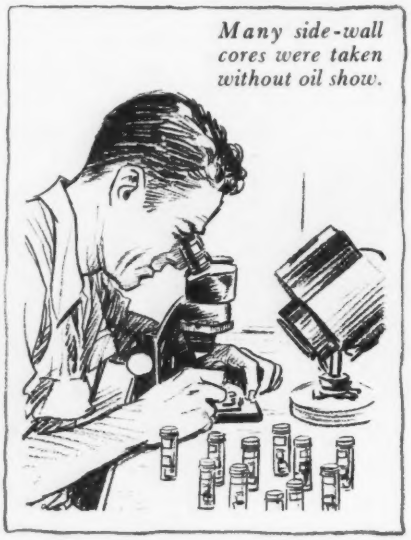
"Well, tell me this, Bill," he said, "how can you oil men be so sure you've got a dry hole? How do you know what's down there thousands of feet under the ground? Maybe you drilled right through a good oil sand and didn't know it."

The production geologist didn't answer at once. He looked at his wrist watch, then peered out the front window at the driving rain. He made a quick mental calculation, then settled back on the counter stool.

"Pete," he said, "I'm going to try to explain how we can tell that Whitcomb test is a dry hole. Do you know what an electric log is?"

The cafe man shook his head. "I've heard the men talking about it, but I can't rightly say I understand what it is," he said.

"Well it's a pretty technical thing," Bill continued, "but it's mighty important to us because it gives us a sort of "picture" of everything we drill through. We lower an electrical instrument into the hole and it makes a record of the variations in the flow of electricity as the instrument passes from one formation to another. From this record, or log as we call it, we can tell where there is hard rock and where there is porous rock. We can also tell fairly well whether a formation contains oil or salt water."



Many side-wall cores were taken without oil show.

"Sounds like a handy gadget, all right," Pete said. "Did you use it on Joe Whitcomb's well?"

"All the way," Bill answered. "Except for about 100 feet at the surface, we electric logged that test all the way to the bottom, 10,000 feet down."

"And it didn't show any sign of oil in all that distance?" Pete sounded surprised.

"Oh, yes," Bill said. "We found some indications at several horizons; places that looked like they might contain some oil. And we didn't take any chances on passing them up, either. Wherever there was even a suspicion of a showing, we took side-wall cores, examined them carefully, and even sent some in to the home office laboratory for detailed analysis. I guess we took nearly a hundred such cores from the walls of that hole, all the way from the surface formations to the bottom of the hole. And we also did quite a bit of wire-line coring, if you know what that is."

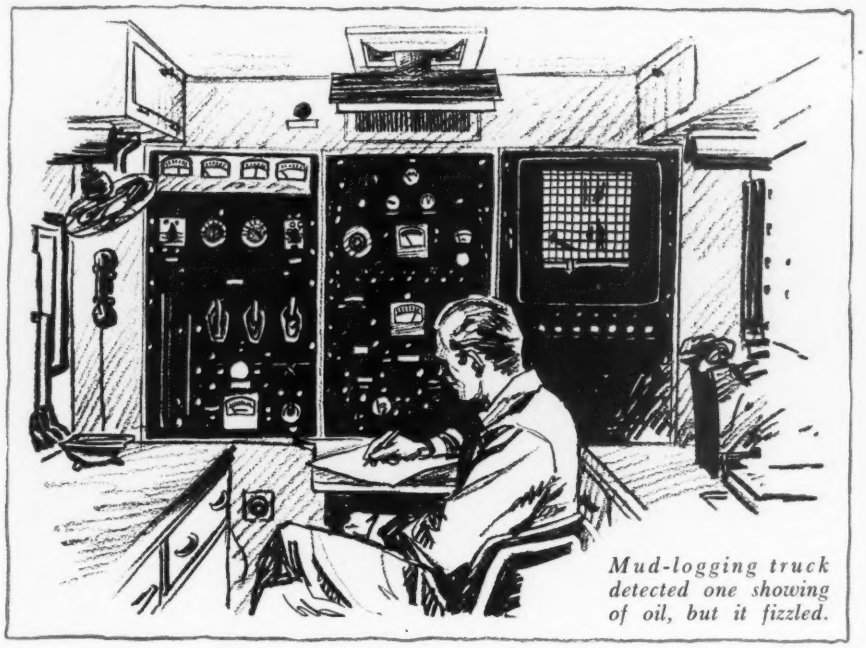
"I don't," Pete said with a grin.

"Well, that's a method of taking a core right out of the center of the hole as you drill down," Bill explained. "We started wire-line coring as soon as we hit the top of the Cockfield formation, which was the first of the two formations we were most interested in. We ran continuous cores through the upper 262 feet of that formation, and examined every foot of it. Did the same thing when we hit the top of the Wilcox formation. Matter of fact, we ran wire-line cores through five different strata in that 10,000-foot test."

"And you couldn't find any showing of oil in all that?" Pete asked with raised eyebrows.

"Oh, sure," Bill answered, "there were a few slight showings. There usually are. I've watched hundreds of tests go down in the past ten years, and I don't remember but very few that have gone to 10,000 feet without some showings of oil. But a slight showing doesn't mean you have an oil well. The cores that contained a faint indication of oil were of such nature that they couldn't possibly produce oil in com-

Wire-line cores were taken in zones most likely to have oil.



Mud-logging truck detected one showing of oil, but it fizzled.

mercial quantities. The rock was not permeable, and the tiny particles of oil are hopelessly trapped. There are no connecting passageways that would permit the oil to flow. It's like you'd fill a bunch of capsules with oil then put them in a milk bottle. The bottle might be full of oil that way, but you couldn't pour any of it out because it is all sealed in individual capsules. See what I mean?"

"Yeah," Pete scratched his temple thoughtfully, "that makes sense. But what was that other thing they did out there on that well? I think I heard them call it a drill-stem test."

"I was just coming to that," Bill said. "That was the only time we came even close to making an oil well, and it didn't pan out either.

"You see, we had a mud logging truck on hand all the time we were drilling in the Wilcox. That's a testing laboratory on wheels, and it is used to examine samples of the drilling mud as it circulates back up from the bottom of the hole. If there is any oil or gas in the formation the drill is going through, the mud logging equipment will detect it.

"Well, we had a mud log showing when we were down to about 9400 feet. So we stopped immediately and put on the wire-line coring bit. We took a ten-foot core and found that the top six feet showed some traces of oil. Didn't look too promising, but it was worth a drill stem test."

"How do you do that?" the cafe man asked.

"It's done with special equipment," Hendrix explained. "To put it simply, we lowered a perforated pipe down to the bottom of the hole, and sealed it off from the drilling mud and other porous zones above with a kind of packer. When the pressure of the mud from above is relieved, whatever fluids there are in the formation flow into the perforations and up inside the pipe. You see how it works?"

"I think so," Pete nodded. "The pressure down there forces the oil up through the hollow pipe and it just flows out the top. That right?"

"Well, yes," Bill laughed. "That's the idea. Except in this case there wasn't enough pressure to force the formation fluid to the surface. So we had to close a valve, trap the fluid, and pull the pipe back up to see what we had. The fluid column had risen 350 feet inside the pipe, but it was salt water, not oil."

"And that was your last showing, I guess," the cafe man got up and walked around behind the counter.

"The last one that amounted to anything," Bill answered, reaching for his safety hat on the stool beside him. "Of course, after we got to the bottom at 10,000 feet, we took another careful look at the electric log of the entire hole, and went back and took some more side-wall cores at every spot where there was even a questionable possibility."

Bill put on his safety hat, laid a dime on the counter, and walked toward the door. Pete picked up the empty cup and saucer.

"Still a dry hole?" he asked.

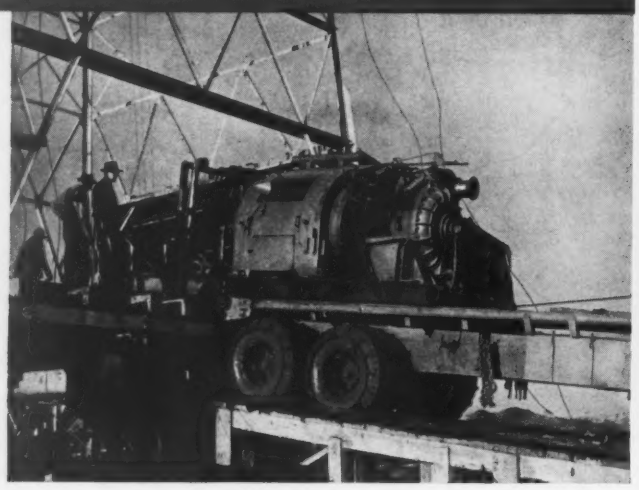
"Dry as a bone," Bill grinned.

"I'm convinced," said the cafe man.

Drill-stem test produced salt water instead of crude oil.

Cement truck and pumper inject cement plug into the dry hole by circulating through the drill stem to the required depth.

ABANDON SITE



Draw works unit is skidded onto heavy duty truck trailer as drilling equipment is dismantled for move to new location.

Derrick is dismantled and stacked or moved to another drilling site; skilled derrick crew can perform this task quickly.

Hauling out dismantled drilling equipment from site of dry hole which has been plugged, truck loaded with sub-structure section moves slowly over temporary board road.

What do you do with a wildcat test when it turns out to be a dry hole?

WHEN an oil test proves to be a dry hole, the operator has little to show for his money and effort except some geological information and a hole in the ground.

The geological information has considerable value; the hole has none.

But the operator can't just move off and leave that hole unprotected. He must plug it securely so that any oil, gas, and water will be confined permanently to the strata in which they were found. This is accomplished generally by plugging off each high pressure zone with cement, and filling the remainder of the hole with mud weighing at least 10 pounds to the gallon. As an extra precaution, Humble makes it a practice to plug the bottom end of the surface casing with cement.

To complete the plugging, a metal cap is threaded into the top of the surface casing. This cap is usually fitted with a valve, just in case something goes wrong below. If, by any chance, gas should work its way past the plugs, it can be bled off through the valve. And, if necessary, additional mud can be pumped through the valve into the hole.

After the hole has been safely plugged, the drilling equipment and derrick are dismantled and removed from the site. Clean-up crews then pick up all the remaining debris. Mud pits, basement pit, and other holes are levelled, and the drilling site is restored to as nearly its original condition as possible.

Often, within a few months after Humble abandons a dry hole, the site is again producing crops or pasture grasses. Only faint traces remain of the once busy spot where oil men gambled and lost.

Picking up boards around plugged hole; when ground is cleared, pits will be filled.

Capped casing is only indication that a dry hole was drilled here two years ago.

Sixteen employees retire

Five have been with Humble more than 33 years; one has more than 38 years of Company service

FIVE of 16 long-time employees of Humble retiring since the last issue of THE HUMBLE WAY have more than 33 years' service. They are: Edward A. Goldsmith, system coordinator clerk in the Houston Office, with almost 34 years; Alvis H. Smith, district superintendent at Goose Creek, with more than 38 years; Congress E. Stanley, superintendent at Thompsons, with more than 33 years; Milo W. Terry, lease pumper-gauger at Conroe, with more than 34 years; and Clarence K. Brown, senior truck salesman at San Antonio, with more than 33 years' service.

Only two of the 16 recent annuitants have less than 23 years with the Company.

HUMBLE PIPE LINE COMPANY

WILLIAM E. BASSETT, engineer at Lytle Station, retired December 23 after more than 26 years' service. He joined the Company at Lytle and remained there throughout his service with Humble. Hunting, fishing, and chicken raising are among his special interests he will pursue during retirement. He will live at Devine, Texas.

Assistant Connection Foreman JESSE R. HOWERY at Harbor Island retired November 21 with 29 years' service. All of his career with Humble was spent at the Texas City Station and Harbor Island. He moved to Harbor Island in 1931. Mr. Howery plans to work around his house and spend some time fishing. His home will be in Aransas Pass, Texas.

Chief Engineer CLAUDDUS M. JOHNSON at Hawley Station retired November 1 after more than 31 years' service. Mr. Johnson started to work as a laborer; he has served in Gorman, Pioneer, Bennett, Ranger, Peak, Pickett, Jenkins, Fambrough, and Hawley. His special interests include sports and ranching. He will buy, raise, and sell cattle during retirement.

Coon hunting is the favorite sport of JOHN LORAN, janitor at Odessa Office. After retirement December 24, he will participate more in this sport. He has seven coon dogs. He plans to move to East Texas and do some truck farming and hunting. He has been with Humble almost 17 years.

JOHN L. ROBERSON, engineer at Mt. Pleasant Station, retired November 1 after 32 years' service with Humble. He was employed at Chaney as a laborer. He has worked also as a carpenter, foreman, oiler, and engineer. His hobbies are hunting and fishing. Mr. Roberson plans to move to a farm 15 miles northeast of Mt. Pleasant. There he will do some stock farming and take care of his wife's flowers while she teaches school.

PRODUCTION DEPARTMENT

EDWARD A. GOLDSMITH, who retired from Production Operating in the Houston Office on December 13, was inspired to join Humble almost 34 years ago by the orderly appearance of a Humble camp he saw near Desdemona while working for an Amarillo drilling firm. Perhaps another reason Mr. Goldsmith sought employment with Humble was that he worked for the drilling firm as an apprentice roughneck without pay. In his career with Humble he served as roustabout, clerk, district chief clerk, division chief clerk, and system coordinator clerk—the last title he held on retiring. His hobbies include conservation of wildlife, baseball, and tennis. He has purchased a building site in Eagle Rock Ranch Club at Wimberley, Texas, and is a member of the club.

ALBA A. JACKSON, lease pumper-gauger at London District, retired November 16 after more than 23 years' service. He was employed as a laborer at Pyote. He moved to London in 1931. Among his special interests he includes reading. He hopes to settle in East Texas in the future and open a small business.

MAURICE M. MORGAN, compressor plant operator and gauger at Paradise District, retired November 3 after more than 16 years' service. Mr. Morgan began his career with Humble as a roustabout in the East Texas Division. He moved to the Louisiana Division in March of 1938.

Lease Pumper-Gauger CHARLES A. RHEA at Friendswood retired November 29 after almost 24 years of service with Humble. He began with the Company as a roustabout at Ranger. Later he worked as a rotary helper, derrickman, driller, and pumper. He owns a home in Alvin where he will live.

ALVIS H. SMITH, district superintendent at Goose Creek, worked his entire career, 38 years and 2 months, without a disabling injury. He began work with Humble at Sour Lake as foreman in November, 1918. Prior to this date, he worked for Farish and Ireland, beginning in September, 1915. He was named superintendent August 16, 1921, while at Sour Lake; he moved to Goose Creek District on August 1, 1933. Mr. Smith retired November 1. He likes baseball, football, and fishing. He bought a home in Houston. His plans during retirement include some traveling and visiting with friends.

District Superintendent CONGRESS E. STANLEY at Thompsons retired November 4 after more than 33 years' service. He was employed at West Columbia as foreman. Later he worked as gangpusher, connection foreman, assistant super-

Employees Recently Called to Military Service

ARMY

Richard L. Bartula	Exploration Geologic, Texas
Clayton D. Childress	Avoca District
James J. Dow	London District
Loyd R. Jackson	Sales Accounting, Houston
Donald H. Janicek	Stationery & Reproduction, Houston
William D. McRae	Gulf Coast Div., Office, Houston
Lee R. Perryman	Galveston Bay District
Robert P. Pontif	North Crowley District
Calvin Ranne	Galveston Bay District
Ralph E. Russell	Longview Connection, Pipe Line
John W. Thomas	Baytown Refinery

intendent, and district superintendent. Mr. Stanley is building a home in Conroe, where he plans to live during retirement. He owns two ranches near Montgomery, one of which has an 8-acre lake stocked with fish. He will farm, fish and raise cattle. He also plans to build a guest house in which to entertain friends.

MILO W. TERRY, lease pumper-gauger at Conroe, retired December 21 after more than 34 years' service. He began work with the Company as a carpenter at Baytown Refinery. Later he worked as a bottom man, stillman, and insulator at the Refinery; roustabout and lease pumper-gauger in the Production Department. He owns his home and 15 acres of land near Conroe, where he will raise small vegetable garden and gladiolas. He also plans to travel.

BAYTOWN REFINERY

FRANCIS R. BROWN, garage foreman, moved to his ranch at Vernon, Florida, after retiring November 1. Mr. Brown has been with Humble more than 31 years. He started as a laborer and has worked in various departments in the Refinery. He transferred to the Garage Department in 1922 and became its foreman in 1929. He will pursue his special interests of hunting, fishing, and ranching during retirement.

JAMES W. HENDERSON, helper, retired September 30 after more than 26 years' service. All of his service with Humble has been at the Refinery where he worked in various capacities. He plans to live in Baytown and do some gardening. His hobbies include TV, reading, and traveling.

ODES E. HENSON, boiler repairman pusher, retired November 5 after more than 25 years of service. He began his employment with the Humble Pipe Line Company and moved to Baytown Refinery in 1928. While in the Refinery, he worked in the Boilermaker, Power, and other departments. His special interests are gardening and cattle raising.

SALES DEPARTMENT

Senior Truck Salesman CLARENCE K. BROWN of the San Antonio Bulk Station retired December 16 with more than 33 years' service. Mr. Brown was employed in San Antonio, remaining there throughout his career with Humble. He became associated with the company's old terminal shortly after it started, and he took part in the opening of the present terminal. Hunting and fishing are his hobbies. He will continue to live in San Antonio.

Deaths

Since the last issue of THE HUMBLE WAY, 14 active employes and nine annuitants have died.

Active employes who have died are: Oscar J. Aucoin, 52, district chief clerk at Paradise, on November 29; Julius M. Bittick, 44, tester at Baytown Refinery, on November 28; Leslie V. Bogges, 59, toolpusher at Pampa District, on November 25; Alfred A. Boudreaux, 49, farm boss at Grand Isle, on November 5; Jesse P. Castleberry, 37, transport operator at the Houston Bulk Station, on October 19; Sheb E. Coldiron, 55, stock gauger at Satsuma Station, on October 21; Marvin F. Croft, 30, district clerk at Means on military leave, on October 15; J. C. Elliott, 42, welder first at Baytown Refinery, on November 3; David G. Gray, 58, executive assistant in the Houston Office, on November 25; Luby T. Harrison, Sr., 55, pipefitter first at Baytown Refinery, on November 25; Ernest O. LaFara, 53, pipefitter first at Baytown Refinery, on December 7; Eugene A. Murchison, III, 22, associate geologist in Exploration Geological, on November 29; John J. Williams, 53, oiler at Satsuma Station, on October 23; Everett R. Wyatt, 51, farm boss at Lovell Lake District, on November 13.

Annuitants: John W. Chapman, 52, field gauger at Odessa District before his retirement, died on November 7; William Clemens, 68, handy repairman at Baytown Refinery before his retirement, died on November 30; William H. Donnelly, 80, stillman at the Baytown Refinery before his retirement, died on November 15; Edward J. Malmquist, 82, supply generator man at Baytown Refinery before his retirement, died on December 5; William C. May, 74, invoice clerk in Crude Oil Accounting in the Houston Office before his retirement, died on December 3; Percy R. Reese, 62, utility man at the Speciality Products Manufacturing & Fuel Oil Terminal before his retirement, died on October 21; William W. Ruff, 66, water station pumper at Talco District before his retirement, died on November 13; James B. Spurlock, 73, toolroom man at Baytown Refinery before his retirement, died on November 15; Walter R. Trelford, 67, manager of Crude Oil Department in the Houston Office before his retirement, died on December 6.

Employees Recently Returned From Military Service

AIR FORCE

Alston L. Davis	Stationery & Reproduction, Houston
James L. Elkin, Jr.	Exploration Geologic, West Texas
Jack G. Hester	Baytown Refinery
Taylor J. Miller	Baytown Refinery
Ralph L. Smith	Harbor Island
Billy J. Stewart	Crude Oil Acctg., Houston
Ernest V. Willhelm, Jr.	Production Acctg., Houston

ARMY

Alfred Boudreaux, Jr.	Grand Isle District
James, V. Dean, Jr.	Petroleum Eng., Houston
Floyd E. Garrot	London District
Felix M. Weisinger	Land Records & Rentals, Houston

MARINE CORPS

John A. Black	Friendswood District

NAVY

A. W. Adams	Comptroller's, Houston
Lester L. Lenz	Exploration Geophysics, Houston
Joseph R. McGonigle	Sales Department, Houston
Charles E. McEachern	Gulf Coast Div., Office, Houston
Robert W. Moore	Greta District
George C. Sowell	Baytown Refinery

By the way . . .

NEW RESEARCH CENTER NEARS COMPLETION

Humble's new Houston Research Center is in the final stages of construction and will be ready for occupancy in the near future. The first research groups will begin moving into the new quarters early in 1954.

Located on a 15½-acre site at Buffalo Speedway and West Alabama in southwest Houston, the Center will provide working space for approximately 330 employees. It will be occupied by the groups conducting research and development in geophysics, geology, drilling, and production.

The main building contains more than 300 rooms on three floors. These rooms include up-to-date laboratories, offices, conference rooms, a class room, and an assembly room. Ground level geophysics and production research shops will have easy access to seven covered truck bays.

A service building at the rear of the main building will contain a snack bar, core cutting rooms, geophysics warehouse, carpenter shop, seismic cable shop, storage space, and other service facilities.

THE 1953 ADDITIONAL CONTRIBUTION

An additional contribution of approximately $5,925,000 has been added to the Thrift Fund accounts of participants in Humble's Annuity and Thrift Fund Plan, the Company announced on October 29.

The 1953 contribution went to some 18,000 employees, about 99 per cent of those eligible to take part in the Plan. The sum was in addition to regular contributions made by the Company during the year to supplement the savings of employees.

Each eligible employee was credited with $25 plus his or her pro rata share of $5,475,000. Participating employees who retired in the course of the year and those on military leave also shared in the special contribution.

HUMBLE ON THE AIR

With the closing of the 1953 football season, Humble rounded out 20 years of Southwest Conference broadcasts.

But the 20th anniversary year brought two new developments in the Company's advertising program. For the first year, "Football in Review" brought fans the highlights of the previous week's games in a 30-minute weekly television program. And for another "first," the Humble Company inaugurated radio broadcasts of Texas Tech games for football enthusiasts in West Texas and the Panhandle area.

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HUMBLE OIL & REFINING COMPANY

P. O. Box 2180, Houston 1, Texas

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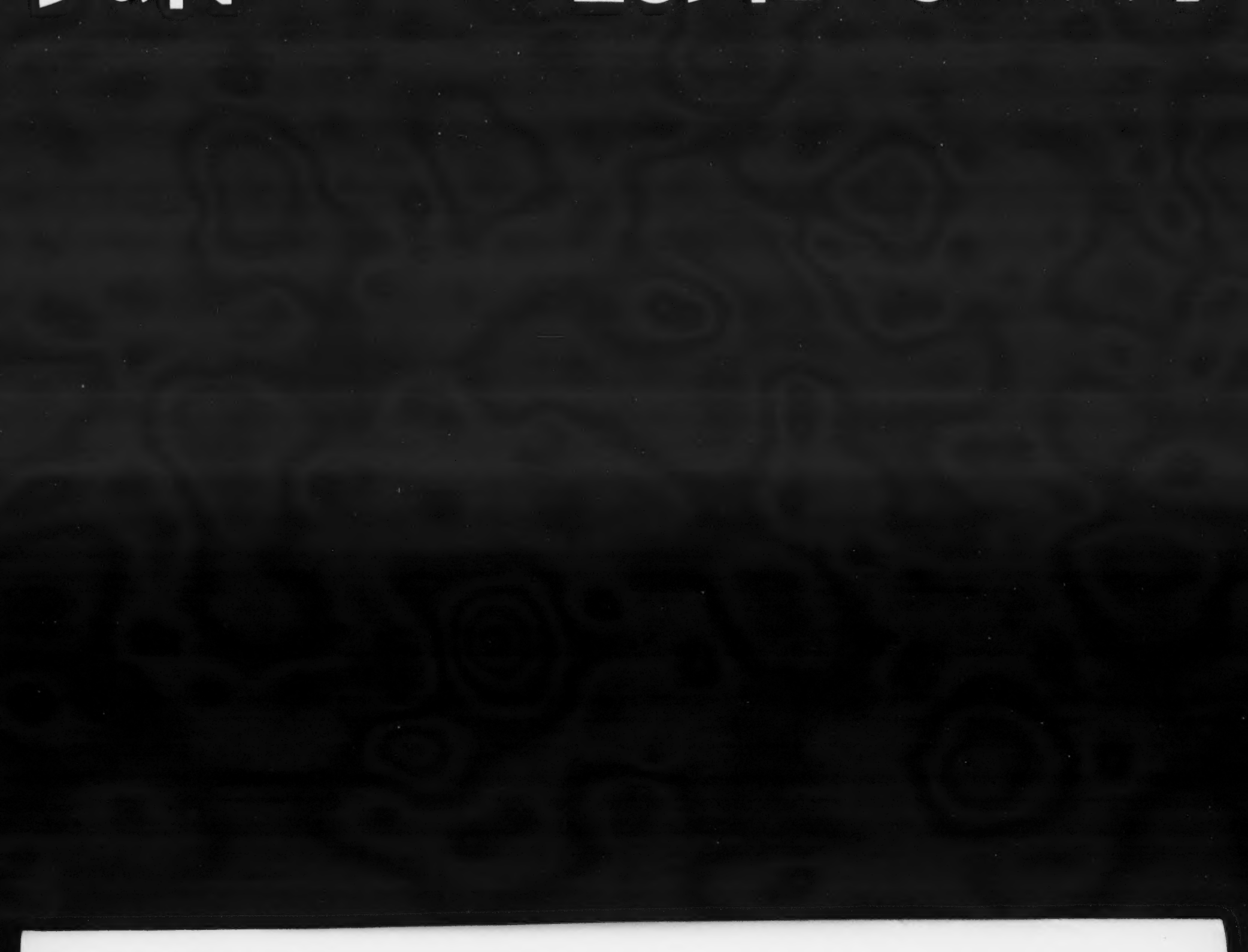

50 Years of Flight

Fifty years have flown by since the Wright Brothers' box kite of an airplane became skyborne on December 17, 1903. From the sands of Kitty Hawk to the concrete aprons of today's airports is only a short jump in time, but that brief span has seen the airplane revolutionize travel and transport. The oil industry has played its part by providing special fuels (currently well over half a billion gallons a year) for America's numerous giant-thirsted airliners.

Huge tankers, sinking deeper in the water as they take on oil, are a familiar sight at Humble's Baytown docks on the Houston Ship Channel, just across the road from Baytown Refinery. Artist E. M. Schiwetz painted this scene from a point across the channel, with tall refinery units visible in the background.

At Baytown docks is loaded one-third of all cargo handled by the leading oil port in the world—Port Houston. On an around-the-clock average there during the past 12 months, one tanker or barge was loaded with oil every three hours! Besides crude oil, the cargo may be aviation or motor gasoline, heating oil, solvents, lubricants—any one of the many products supplied by Baytown Refinery.

The docks are equipped and prepared for "fast turnarounds." As much as a hundred thousand barrels of oil can be pumped in one hour, and as many as six tankers and six barges can be loaded at the same time.